NWS: EHB-6, Maintenance Note 40
DoD: TO 31P1-4-108-622
FAA: EEM Modification Handbook 6345.1 CHG 52, Chap 50

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

DOPPLER METEOROLOGICAL RADAR WSR-88D

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COMMERCE, THE AIR FORCE, THE NAVY, AND TRANSPORTATION

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FAA APPROVAL

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BY ORDER OF THE SECRETARY OF THE AIR FORCE

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Chief of Staff

Date _____

Edward L. Berkowitz, Chief
Program Branch
Radar Operations Center
TOMA

1. SUBJECT

Radome Entry Lockout/Tagout Procedures.

2. PURPOSE

This document provides interim guidance on implementation of Lockout/Tagout (LO/TO) procedures when working within the NEXRAD radome. Based on recent OSHA guidance, the ROC Safety Officer for the NEXRAD network has designated the NEXRAD radome as “Permit Required - Confined Space”. For most maintenance actions the radome may be reclassified as “Non-Permit Required - Confined Space” as long as LO/TO procedures are properly implemented, ensuring equipment is not inadvertently energized during the maintenance action. Antenna troubleshooting requiring application of power to the Pedestal drive motors while a technician is located inside the radome shall require an Entry Permit.

This document provides procedures required to implement LO/TO prior to radome entry. However, the following assumptions are made: site personnel know the definition of “Permit Required - Confined Space”; have and enforce LO/TO procedures, and have knowledge of an “Entry Permit” and its use. This interim guidance will be in effect until appropriate changes are implemented into the WSR-88D Technical Manuals.

For additional information concerning this document, contact the Radar Operations Center (ROC) Hotline, Norman, OK; phone number: (800) 643-3363 or (405) 366-2980 or by e-mail at NEXRAD.Hotline@noaa.gov. An electronic copy of this document can be found at the following Internet address:
www.roc.noaa.gov/ssb/sysdoc/techman/tmlinks.asp

3. SITES AFFECTED

See ATTACHMENT 2.

4. ESTIMATED COMPLETION DATE

The implementation of the procedures in this document is required any time radome entry is required. Affected sites, listed in ATTACHMENT 2, must report receipt of this document and associated materials within 60 days.

5. EQUIPMENT AFFECTED

Radar Data Acquisition Group.

6. SPARES AFFECTED

Not applicable.

7. MODIFICATION ACCOMPLISHED BY

Site electronics technicians will perform this modification. Two technicians are required to perform this action.

8. MATERIAL REQUIRED

The following parts are required to accomplish this maintenance:

Nomenclature	Part Number	NSN	Qty
Lockout Device	PSL-CB	5925-01-392-7701	2

9. SOURCE OF MATERIALS

Kits are requisitioned by the ROC Retrofit Management Team and shipped at no cost to the site.

10. SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED

Not applicable.

11. TIME AND PERSONNEL REQUIRED

Work Phases	Work-hours
Unpacking	0.0
Disassembly	0.0
Installation	0.0
Assembly	0.0
Operational Check	0.0
Total Work-hours	0.0

12. DOCUMENTS AFFECTED

Not applicable.

13. VERIFICATION STATEMENT

This modification was successfully installed at the Radar Operations Center, Norman, OK.

14. DISPOSITION OF REMOVED AND REPLACED PARTS/MATERIALS

Not applicable.

15. PROCEDURES

Perform the procedures in ATTACHMENT 1.

16. FAA DISTRIBUTION

This directive is distributed to selected offices and services within Washington headquarters, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, regional Airway Facilities divisions, and Airway Facilities field offices having the following facilities/equipment: NXRAD.

17. CHANGES TO TABLE OF CONTENTS (FAA)

This chapter will be included in the next revision to the table of contents for FAA Order 6345.1, Electronic Equipment Modification Handbook - Next Generation Weather Radar (NEXRAD).

18. RECOMMENDATIONS FOR CHANGES (FAA)

Forward any recommendations for changes to this directive through normal channels to the National Airway Systems Engineering Division, AOS-200, Operational Support.

19. REPORTING INSTRUCTIONS

a. NWS

Report receipt and review of this maintenace note on WS Form A-26, Engineering Management Reporting System Maintenance Record, according to the instructions in NWS Instruction (NWSI) 30-2104, Engineering Management Reporting System (EMRS), part 2 and Appendix G. Include the following information on the WS Form A-26:

- An Equipment Code of RDA in Block 7.
- The appropriate serial number in Block 8.
- A Mod No. of M40 in Block 17a.

A sample EMRS report is provided as ATTACHMENT 4.

b. DoD

Update the AFTO Form 95 to show TCTO compliance. Report TCTO compliance in accordance with TO 00-20-2, Table 3-10, Rule 9.

c. FAA

Enter this directive number, date, and chapter number on the appropriate FAA Form 6032-1, Airway Facilities Modification Record.

Use the Maintenance Management System (MMS) application Log Equipment Modification (LEM) function to report the completion of this modification. Verify N is in the REP COD field to ensure the log entry will be upward reportable to the national data base for access by AOS. This directive should be entered into the LEM fields as follows:

(1) FAC/SERV: NXRAD

(2) LOC/IDENT: 55 BA

(3) Short Name: SYS

(4) Order No.: 6345.1

(5) Chapter: 50

(6) Change: 52

d. DoD

Complete ATTACHMENT 3, and return the information to the ROC by one of the four methods below:

(1) Mail Address: Program Branch, Retrofit Management Team
WSR-88D Radar Operations Center
3200 Marshall Ave., Suite 101
Norman, Oklahoma 73072-8028

(2) Fax Number: (405) 573-3480
ATTN: Retrofit Management Team

(3) E-mail Address: NEXRAD.Logistics@noaa.gov

(4) Web Version: http://www.roc.noaa.gov/ssb/logistics/completion.asp

NWS: EHB-6, Maintenance Note 40
DoD: TO 31P1-4-108-622
FAA: EEM Modification Handbook 6345.1 CHG 52, Chap 50

ATTACHMENT 1

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

Purpose:

Based on recent OSHA guidance, the ROC Safety Officer for the NEXRAD network has designated the NEXRAD radome as “Permit Required - Confined Space”. For most maintenance actions the radome may be reclassified as “Non-Permit Required - Confined Space” as long as LO/TO procedures are properly implemented, ensuring equipment is not inadvertently energized during the maintenance action. Antenna troubleshooting requiring application of power to the Pedestal drive motors while a technician is located inside the radome shall require an Entry Permit.

The NEXRAD radome contains electrical (208 VAC at slip rings), mechanical/physical (moving antenna), and radiation (non-ionizing) hazards. Therefore, tasks requiring the application of drive voltage and/or RF energy being radiated will be considered a Permit Required condition. This means an entry permit must be obtained from, and signed by an entry supervisor. An attendant must be stationed outside the confined space to monitor entrance to and egress from the confined space.

The radome is a “Permit Required - Confined Space” and includes the three confined spaces of the pedestal (azimuth riser, azimuth housing, and elevation housing).

The +/- 5 VDC, 28 VDC and the 120 VAC outlets are not considered a hazard and will not have to be turned off unless the task at hand requires it.

Reference:

- OSHA Standard 29 CFR, Part 1910, Subpart J, 1910.146 - PERMIT REQUIRED CONFINED SPACES
- OSHA Standard 29 CFR, Part 1910, Subpart J, 1910.147 - THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)
- NWSM 50-1115, Procedure 12. - CONFINED SPACE ENTRY

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 1

LOCKOUT/TAGOUT FOR CORRECTIVE AND/OR PREVENTATIVE MAINTENANCE

The NEXRAD radome is classified as a "Permit Required - Confined Space". The radome contains electrical (208 VAC at slip rings), mechanical/physical (moving antenna), and radiation (non-ionizing) hazards. Completion of the following steps eliminates the hazards and allows reclassification of the radome as a Non-Permit Required - Confined Space. Reversal of any of these steps will negate the reclassification and the space will revert to a Permit Required - Confined Space.

1. To gain local control from the MSCF Workstation, perform the following:

   a. On the HCI (Active/Controlling channel only for FAA redundant systems), click on the Control block in the RDA container and then click on Enable Local (RDA).

2. At the RDA Application Terminal:

   a. At the `RDA Main Menu`, enter **RELC<Return>** (Controlling channel at redundant sites.)

   b. At the `RDA Main Menu`, enter **STBY<Return>** to place the transmitter in standby.

3. At the `RDA Main Menu`, enter **TERP<Tab>***password***<Return>** (Redundant sites, repeat this step on the other channel) to terminate the RDA Application program.

4. Place a SAFETY WARNING tag on the RDA Maintenance Panel (UD5A2).

CAUTION

Only apply light torque to the lockout device (part number PSL-CB) setscrew contacting the circuit breaker paddle. Excessive force may cause the circuit breaker paddle to break.

5. At the Secondary Power Distribution Panel (UD7A3 for single channel, UD7A29 for FAA redundant, or UD7A30 for NWS redundant systems), turn **OFF** and **LOCKOUT** CB2, 4, and 6 (ganged) PEDESTAL MOTOR POWER and CB16 and 18 (ganged) SIGNAL PROCESSOR. Use Panduit part number PSL-CB circuit breaker lockout device and place a SAFETY WARNING tag on the lockout device.

6. In the Radome place the safety chains across the opening of the radome access hatch.

7. At the Antenna/Pedestal (UD2) perform the following steps:

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

a. On the Azimuth Riser (UD2A1), place the PWR ON/SAFE Switch (UD2A1A3S5) in the **SAFE** (down) position.

b. Stow the antenna in Azimuth and Elevation by aligning the stow mechanisms and inserting the ball lock pins in the STOW position.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 2

SYSTEM RESTORATION PROCEDURE

1. To restore the Antenna/Pedestal (UD2):

   a. Disengage the Azimuth and Elevation stow pins, reposition the stow mechanisms and insert the ball lock pins in the OPERATE position.

   b. On the Azimuth Riser (UD2A1), place the PWR ON/SAFE Switch (UD2A1A3S5) in the **PWR ON** (up) position.

   c. Remove the safety chain from the opening of the radome access hatch.

   d. Exit, close, and lock the radome hatch.

2. At the Secondary Power Panel (UD7A3) for single channel, UD7A29 for FAA redundant, or UD7A30 for NWS redundant systems) remove the SAFETY WARNING tag and unlock and turn **ON** circuit breaker CB2, 4, and 6 (ganged) PEDESTAL MOTOR POWER and CB16 and 18 (ganged) SIGNAL PROCESSOR.

3. To restore full system operation (controlling channel at redundant sites):

   a. At the RDA System Console, enter **RDAUP<Return>** (Redundant sites, repeat this step on the other channel)

   b. At the RDA Applications Terminal Main Menu, enter **OPER<Return>**.

4. At the RDA Applications Terminal Main Menu, enter **ENRC<Return>** to return control to the RPG. (Controlling channel for redundant sites)

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 3

Procedures in TABLE 3 may be performed only if all the Lockout/Tagout procedures in TABLE 1 are followed.

Paragraphs	Tasks	Exceptions
EHB 6-513 (Limited Production Phase Antenna/Pedestal)		
2-4.2.4	Elevation Limit Switch Adjustment.	Do not stow the antenna in elevation.
2-4.2.5	Pedestal Leveling Check.	Do not stow the antenna in azimuth.
2-4.3	Corrective Maintenance.	Performed by Depot team.
2-4.4.4	Azimuth/Elevation Encoder Replacement.	None
2-4.4.5	Azimuth/Elevation Motor and Coupling Replacement.	Do not stow in the axis of the unit being replaced.
2-4.4.6	Azimuth/Elevation Stow Mechanism Switch Replacement.	Do not stow in the axis of the unit being replaced.
2-4.4.7	Azimuth/Elevation Manual Drive Interlock Switch Replacement.	None.
2-4.4.8	Azimuth Bearing Sump Oil Level Sensor Replacement.	None.
2-4.4.9	Azimuth/Elevation Gearbox Oil Level sensor Replacement.	None.
2-4.4.10	Pedestal Safety Interlock Switch Replacement.	None.
2-4.4.11	Azimuth Data Package Replacement.	None.

Restore the system to normal operation per TABLE 2.

The preventative maintenance portion (paragraph 2-4.2) of this manual have been addressed in NWS EHB 6-503-2.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 4

The procedures in TABLE 4 may be performed only if all the Lockout/Tagout procedures in TABLE 1 are followed.

Paragraphs	Tasks	Exceptions
NWS EHB 6-514 (Full Scale Production Antenna/Pedestal)		
2-4.2.4	Elevation Limit Switch Adjustment	Do not stow the antenna in elevation.
2-4.2.5	Pedestal Leveling Check	Do not stow the antenna in azimuth.
2-4.4.4	Azimuth/Elevation Encoder Replacement	None.
2-4.4.5	Azimuth/Elevation Motor and Coupling Replacement	Do not stow in the axis of the unit being replaced.
2-4.4.6	Azimuth/Elevation Stow Mechanism Switch Replacement	Do not stow in the axis of the unit being replaced.
2-4.4.7	Azimuth/Elevation Manual Drive Interlock Switch Replacement	None
2-4.4.8	Azimuth Bearing Sump Oil Level Sensor Replacement	None
2-4.4.9	Azimuth/Elevation Gearbox Oil Level sensor Replacement	None
2-4.4.10	Pedestal Safety Interlock Switch Replacement	None
2-4.4.11	Azimuth Data Package Replacement	None.

Restore the system to normal operation per TABLE 2.

The preventative maintenance portion (paragraph 2-4.2) of this manual have been addressed in NWS EHB 6-503-2.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 5

The procedures in TABLE 5 may be performed only if all the Lockout/Tagout procedures in TABLE 1 are followed.

Paragraphs	Tasks	Exceptions
NWS EHB 6-510 Radar Data Acquisition (RDA)		
6-5.52.1	Elevation Manual Drive Assembly	None
6-5.52.2	Elevation Manual Drive Interlock Switch	None
6-5.52.3	Elevation Data Package Assembly/ Encoder	None
6-5.52.5	Elevation Gearbox Drive Motor	Do not stow the pedestal in elevation
6-5.52.6	Elevation Stow Pin Switch	None
6-5.52.7	Azimuth Manual Drive Assembly	Do not stow the pedestal in azimuth
6-5.52.8	Azimuth Manual Drive Interlock Switch	None
6-5.52.9	Azimuth Data Package Assembly/ Encoder	None
6-5.52.11	Azimuth Gearbox Drive Motor	Do not stow the pedestal in azimuth
6-5.52.12	Azimuth Stow Pin Switch	None
6-5.52.13	Receiver Protector	None
6-5.52.14	Low Noise Amplifier	None
6-5.52.16	Azimuth Rotary Joint	None
6-5.52.17 (Remove and Replace ONLY)	Pedestal Slip Ring Assembly	Do not stow the pedestal in azimuth or elevation
6-5.52.18	RF Circulator	None
6-5.52.19	Passive Diode Limiter	None
6-5.52.22	Antenna Power Monitor	None

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

Paragraphs	Tasks	Exceptions
6-5.52.69	Pedestal Slip Ring Brush Block Assembly	None
6-5.53	Waveguide Components located in Radome	None
Not in manual	Elevation Rotary Joint	None

Restore the system to normal operation per TABLE 2.

Preventative maintenance portion of this manual have been addressed in NWS EHB 6-503-2.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 6

The procedure in TABLE 6 is to be performed when antenna troubleshooting requires a technician be present in the radome while power is applied to the antenna drive motors. This procedure requires use of an entry permit. The permit will identify specific communication equipment and protocols, and rescue instructions as applicable. Use the permit specific to your agency.

At least two people (three if available) are required to conduct this procedure: one "entrant", and one "attendant". If only two people are used, one must also serve as the "entry supervisor". Additional personnel may act as entrants or backup attendants. The following steps are written for a two person team. If other entrants are present they must follow the same steps as described for a single entrant. If a backup attendant takes over for the attendant he/she must follow the same steps as described for a single attendant.

The following steps assume that the steps in Table 1 have been performed to reclassify the radome as a non-permit required confined space.

The following steps are for entering the radome for troubleshooting antenna problems:

1. The person acting as entry supervisor will confirm the steps in Table 1 are complete and will sign the permit to certify entry conditions are met.

2. One technician remains in radome and prepares for electrical operation. The other technician descends the tower and proceeds to RDA shelter. Ensure two-way communication is made between the radome and the RDA.

NOTE

Ensure davit crane, maintenance hatch railing, ladder, and curved outrigger are stowed away from the base of the radome and where they will not interfere with antenna movement.

3. Disengage the Azimuth and Elevation stow pins, reposition the stow mechanisms and insert the ball lock pins in the OPERATE position.

4. Establish communication with the technician in the radome and have him close the hatch and place the PWR ON/SAFE switch to the **PWR ON** position. The technician in the radome should remain as close to the pedestal base as possible as the pedestal will be commanded to move in the following steps.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

5. At the Secondary Power Panel (UD7A3) for single channel, UD7A29 for FAA redundant, or UD7A30 for NWS redundant systems, remove the SAFETY WARNING tag and unlock and turn **ON** circuit breaker CB2, 4, and 6 (ganged) PEDESTAL MOTOR POWER.

WARNINGS

In the following steps, the technician in the RDA shelter will command the pedestal to move in azimuth and elevation while the second technician in the radome observes the antenna movement to ensure smooth operation. The technician in the radome should remain as close as possible to the pedestal base near the azimuth housing hatch.

If at any point the technician in the RDA shelter suspects the technician in the radome is in danger or has been injured, immediately move circuit breakers CB2, 4, and 6 (ganged) PEDESTAL MOTOR POWER to the "OFF" position and follow the rescue protocol as defined in the permit.

6. Perform required troubleshooting and steps necessary while maintaining a safe distance from the rotating antenna.

7. The technician in the radome sets the PWR ON/SAFE pedestal interlock switch to **SAFE**.

NOTE

Circuit breakers CB2, 4, 6 (ganged) PEDESTAL MOTOR POWER will need to be locked out if further maintenance or corrective measures are required.

8. The technician in the radome contacts the technician in the RDA shelter and instructs them to turn **OFF** circuit breaker CB2, 4, and 6 (ganged) PEDESTAL MOTOR POWER at the Secondary Power Panel (UD7A3) for single channel, UD7A29 for FAA redundant, or UD7A30 for NWS redundant systems.

9. The technician in the radome ensures all tools and equipment are properly stowed or removed from radome.

10. The technician in the radome sets the PWR ON/SAFE pedestal interlock switch to **PWR ON** and exits radome.

11. The technician in the RDA shelter turns **ON** circuit breaker CB2, 4, and 6 (ganged) PEDESTAL MOTOR POWER at the Secondary Power Panel (UD7A3) for single channel, UD7A29 for FAA redundant, or UD7A30 for NWS redundant systems.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

12. At the RDA System Console, enter **RDAUP<Return>**.

13. At the RDA Application Terminal, ensure there are no pedestal related alarms.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 7

The procedures in TABLE 7 may be performed only if all the Lockout/Tagout procedures in TABLE 1 are followed.

Paragraphs	Tasks	Exceptions
NWS EHB 6-503-2 Preventative Maintenance Instructions		
2-016	**Steel Tower:** inspect, clean, and test	None
2-017	**Radome:** inspect	None
2-020	**Antenna/Pedestal Slip Ring Assembly:** inspect and clean	None
2-028	**Antenna/Pedestal:** inspect and clean the Radome Heaters; inspect and clean the Azimuth Gearbox; oil change in the Azimuth Gearbox Oil Collection Bottle; inspect	None
2-034	**Azimuth and Elevation DC Servo Motors:** inspect and clean	None
2-038	**Antenna/Pedestal:** bolt torque and level inspection	None
2-039	**Antenna/Pedestal:** Elevation Bearings/Output Pinion Bearings; Lubricate, Counterweights; inspect, Elevation Gearbox; oil change, Azimuth Oil Reservoir; oil change, Ladder; inspect	None
2-043	**Steel Tower; Radome Davit Crane and Outrigger Hoist Assembly:** inspect, clean, and lubricate	None
2-048	**Radome:** panel bolt torque	None
2-051	Inspection after lightning strike, hail, heavy rain (over 2" per hour), or wind (over 70 knots)	None

Restore the system to normal operation per TABLE 2.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 8

The procedures in TABLE 8 may be performed only if all the Lockout/Tagout procedures in TABLE 1 are followed.

Paragraphs	Tasks	Exceptions
NWS EHB 6-550 Real Property Installed Equipment (RPIE)		
3-2.8	Radome Venting Control Circuitry Operational Check	None
3-2.18	Radome Air Temperature Sensor Circuitry Check	None
3-3.3.2	Radome Venting Circuitry Troubleshooting	None
3-5.6.61	Damper Motor Actuator	None
3-5.6.62	Radome Vent Fan Assembly	None
3-5.6.63	Radome Fan Motor	None
3-5.6.64	Aircraft Warning Light	None
3-6.2	Radome Temperature Transmitter	None
3-6.8	Radome Hatch Interlock Switch Adjustment	None

Restore the system to normal operation per TABLE 2.

ATTACHMENT 1 (Continued)

RADOME ENTRY LOCKOUT/TAGOUT PROCEDURES

TABLE 9

The procedures in TABLE 9 may be performed only if all the Lockout/Tagout procedures in TABLE 1 are followed.

Paragraphs	Tasks	Exceptions
NWS EHB 6-553 Real Property Installed Equipment (RPIE) Redundant Systems		
3-2.8	Radome Venting Control Circuitry Operational Check	None
3-2.18	Radome Air Temperature Sensor Circuitry Check	None
3-3.3.2	Radome Venting Circuitry Troubleshooting	None
3-5.4.41	Damper Motor Actuator	None
3-5.4.42	Radome Vent Fan Assembly	None
3-5.4.43	Radome Fan Motor	None
3-5.4.44	Aircraft Warning Light	None
3-6.3	Radome Temperature Transmitter	None
3-6.8	Radome Hatch Interlock Switch Adjustment	None

Restore the system to normal operation per TABLE 2.

The Preventative Maintenance Inspections in section 3-4 have been addressed in TABLE 7.

ATTACHMENT 2

EFFECTIVITY

NWS

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
	Eastern Region			
ALBANY	EAST BERNE, NY	RDA	ENX	WN9518
BINGHAMTON	BINGHAMTON, NY	RDA	BGM	WN9515
BOSTON	TAUNTON, MA	RDA	BOX	WN9509
BROOKHAVEN	UPTON, NY	RDA	OKX	WN9912
BUFFALO	BUFFALO, NY	RDA	BUF	WN9528
BURLINGTON	COLCHESTER, VT	RDA	CXX	WN9617
CARIBOU	HOULTON, ME	RDA	CBW	WN9712
CHARLESTON, SC	GRAYS, SC	RDA	CLX	WN9208
CHARLESTON, WV	CHARLESTON, WV	RDA	RLX	WN9414
CINCINNATI	WILMINGTON, OH	RDA	ILN	WN9710
CLEVELAND	CLEVELAND, OH	RDA	CLE	WN9524
COLUMBIA	WEST COLUMBIA, SC	RDA	CAE	WN9310
GREER	GREER, SC	RDA	GSP	WN9312
MOREHEAD CITY	NEWPORT, NC	RDA	MHX	WN9307
NORFOLK	WAKEFIELD, VA	RDA	AKQ	WN9952

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
PHILADELPHIA	FORT DIX, NJ	RDA	DIX	WN9950
PITTSBURGH	CORAOPOLIS, PA	RDA	PBZ	WN9917
PORTLAND, ME	GRAY, ME	RDA	GYX	WN9938
RALEIGH/DURHAM	CLAYTON, NC	RDA	RAX	WN9306
ROANOKE	ROANOKE, VA	RDA	FCX	WN9954
STATE COLLEGE	STATE COLLEGE, PA	RDA	CCX	WN9925
STERLING	STERLING, VA	RDA	LWX	WN9931
WILMINGTON	SHALLOTTE, NC	RDA	LTX	WN9301
	Southern Region			
ALBUQUERQUE	ALBUQUERQUE, NM	RDA	ABX	WP9365
AMARILLO	AMARILLO, TX	RDA	AMA	WP9363
ATLANTA	PEACHTREE CITY, GA	RDA	FFC	WP9219
AUSTIN/SAN ANTONIO	NEW BRAUNFELS, TX	RDA	EWX	WP9253
BIRMINGHAM	ALABASTER, AL	RDA	BMX	WP9957
BROWNSVILLE	BROWNSVILLE, TX	RDA	BRO	WP9250
CORPUS CHRISTI	CORPUS CHRISTI, TX	RDA	CRP	WP9251
DALLAS/FT WORTH	FORT WORTH, TX	RDA	FWS	WP9259

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
EL PASO	SANTA TERESA, NM	RDA	EPZ	WP9270
HOUSTON	DICKINSON, TX	RDA	HGX	WP9935
JACKSON/BRANDON, MS	BRANDON, MS	RDA	DGX	WP9235
JACKSONVILLE	JACKSONVILLE, FL	RDA	JAX	WP9206
KEY WEST	BOCA CHICA KEY, FL	RDA	BYX	WP9201
KNOXVILLE	MORRISTOWN, TN	RDA	MRX	WP9325
LAKE CHARLES	LAKE CHARLES, LA	RDA	LCH	WP9240
LITTLE ROCK	NORTH LITTLE ROCK, AR	RDA	LZK	WP9340
LUBBOCK	LUBBOCK, TX	RDA	LBB	WP9933
MELBOURNE	MELBOURNE, FL	RDA	MLB	WP9204
MEMPHIS	MILLINGTON, TN	RDA	NQA	WP9334
MIAMI	MIAMI, FL	RDA	AMX	WP9918
MIDLAND/ODESSA	MIDLAND, TX	RDA	MAF	WP9265
MOBILE	MOBILE, AL	RDA	MOB	WP9223
NASHVILLE	OLD HICKORY, TN	RDA	OHX	WP9327
NORMAN	MIDWEST CITY, OK	RDA	TLX	WP9921
NORTHEAST ALABAMA	HYTOP, AL	RDA	HTX	WP9914
SAN ANGELO	SAN ANGELO, TX	RDA	SJT	WP9263

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
SHREVEPORT	SHREVEPORT, LA	RDA	SHV	WP9248
SLIDELL	SLIDELL, LA	RDA	LIX	WP9919
TALLAHASSEE	TALLAHASSEE, FL	RDA	TLH	WP9214
TAMPA	RUSKIN, FL	RDA	TBW	WP9961
WESTERN ARKANSAS	CHAFFEE RIDGE, AR	RDA	SRX	WP9356
TULSA	INOLA, OK	RDA	INX	WP9356
	Central Region			
ABERDEEN	ABERDEEN, SD	RDA	ABR	WR9659
BISMARCK	BISMARCK, ND	RDA	BIS	WR9764
CHEYENNE	CHEYENNE, WY	RDA	CYS	WR9564
CHICAGO	ROMEOVILLE, IL	RDA	LOT	WR9969
DENVER	FRONT RANGE AP, CO	RDA	FTG	WR9469
DES MOINES	JOHNSTON, IA	RDA	DMX	WR9546
DETROIT	WHITE LAKE, MI	RDA	DTX	WR9954
DODGE CITY	DODGE CITY, KS	RDA	DDC	WR9451
DULUTH	DULUTH, MN	RDA	DLH	WR9745
FARGO/GRAND FORKS	GRAND FORKS, ND	RDA	MVX	WR9750

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
GOODLAND	GOODLAND, KS	RDA	GLD	WR9465
GRAND ISLAND	BLUE HILL, NE	RDA	UEX	WR9552
GRAND JUNCTION	GRAND JUNCTION, CO	RDA	GJX	WR9476
GRAND RAPIDS	GRAND RAPIDS, MI	RDA	GRR	WR9635
GREEN BAY	GREEN BAY, WI	RDA	GRB	WR9645
INDIANAPOLIS	INDIANAPOLIS, IN	RDA	IND	WR9438
JACKSON, KY	JACKSON, KY	RDA	JKL	WR9956
LA CROSSE	LA CROSSE, WI	RDA	ARX	WR9643
LINCOLN	LINCOLN, IL	RDA	ILX	WR9436
LOUISVILLE	FORT KNOX, KY	RDA	LVX	WR9423
MARQUETTE	NEGAUNEE, MI	RDA	MQT	WR9743
MILWAUKEE	DOUSMAN, WI	RDA	MKX	WR9965
MINNEAPOLIS	CHANHASSEN, MN	RDA	MPX	WR9658
NCL MICHIGAN	GAYLORD, MI	RDA	APX	WR9610
NORTH PLATTE	NORTH PLATTE, NE	RDA	LNX	WR9562
NORTHERN INDIANA	NORTH WEBSTER, IN	RDA	IWX	WR9534
OMAHA	VALLEY, NE	RDA	OAX	WR9553
PADUCAH	PADUCAH, KY	RDA	PAH	WR9957

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
PLEASANT HILL	PLEASANT HILL, MO	RDA	EAX	WR9446
PUEBLO	PUEBLO, CO	RDA	PUX	WR9464
QUAD CITIES	DAVENPORT, IA	RDA	DVN	WR9544
RAPID CITY	NEW UNDERWOOD, SD	RDA	UDX	WR9662
RIVERTON/LANDER	RIVERTON, WY	RDA	RIW	WR9576
SIOUX FALLS	SIOUX FALLS, SD	RDA	FSD	WR9651
SPRINGFIELD	SPRINGFIELD, MO	RDA	SGF	WR9440
ST LOUIS	WELDON SPRING, MO	RDA	LSX	WR9971
TOPEKA	TOPEKA, KS	RDA	TWX	WR9456
WICHITA	WICHITA, KS	RDA	ICT	WR9450
	Western Region			
BILLINGS	BILLINGS, MT	RDA	BLX	WT9677
BOISE	BOISE, ID	RDA	CBX	WT9681
SALT LAKE CITY	SALT LAKE CITY, UT	RDA	MTX	WT9932
CEDAR CITY	CEDAR CITY, UT	RDA	ICX	CONCDC
ELKO	ELKO, NV	RDA	LRX	WT9903
EUREKA (BUNKER HILL)	EUREKA, CA	RDA	BHX	WT9594

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
FLAGSTAFF	FLAGSTAFF, AZ	RDA	FSX	WT9375
GLASGOW	GLASGOW, MT	RDA	GGW	WT9768
GREAT FALLS	GREAT FALLS, MT	RDA	TFX	WT9950
LAS VEGAS	LAS VEGAS, NV	RDA	ESX	WT9386
LOS ANGELES	LOS ANGELES, CA	RDA	VTX	WT9295
MEDFORD	MEDFORD, OR	RDA	MAX	WT9597
MISSOULA	MISSOULA, MT	RDA	MSX	WT9773
PENDLETON	PENDLETON, OR	RDA	PDT	WT9688
YUMA	YUMA, AZ	RDA	YUX	WT9278
PHOENIX	PHOENIX, AZ	RDA	IWA	WT9278
POCATELLO	SPRINGFIELD, ID	RDA	SFX	WT9578
PORTLAND, OR	PORTLAND, OR	RDA	RTX	WT9698
RENO	NIXON, NV	RDA	RGX	WT9488
SACRAMENTO	DAVIS, CA	RDA	DAX	WT9914
SANTA ANA MTS	SANTA ANA MOUNTAINS, CA	RDA	SOX	WT9918
SAN DIEGO	SAN DIEGO, CA	RDA	NKX	WT9918
SAN FRANCISCO	LOS GATOS, CA	RDA	MUX	WT9933
SAN JOAQUIN VALY	HANFORD, CA	RDA	HNX	WT9389

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
SEATTLE	EVERETT, WA	RDA	ATX	WT9922
SPOKANE	SPOKANE, WA	RDA	OTX	WT9785
TUCSON	TUCSON, AZ	RDA	EMX	WT9274
	Miscellaneous			
NSSL (RDA/ONAN GEN/PDST)	NORMAN, OK	RDA	NORO2	MAG000
ROC FAA REDUNDANT	NORMAN, OK	RDA	CRIO2	WG9410
SHANGHAI, CHINA	SHANGHAI,	RDA		
TAIPEI, TAIWAN	TAIPEI,	RDA		
DoD				
ALTUS AFB	FREDERICK, OK	RDA	FDR	FE4419
ANDERSEN AFB	ANDERSEN AFB, GU	RDA	UAM	FE5240
BEALE AFB	OROVILLE, CA	RDA	BBX	FE4686
CAMP HUMPHREYS	CAMP HUMPHREYS, KO	RDA	KSGR4	FI5294
CANNON AFB	FIELD, NM	RDA	FDX	FE4855
COLUMBUS AFB	GREENWOOD SPRINGS, MS	RDA	GWX	FE3022
DOVER AFB	ELLENDALE STATE FOREST, DE	RDA	DOX	FE4497

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
DYESS AFB	MORAN, TX	RDA	DYX	FE4661
EDWARDS AFB	BORON, CA	RDA	EYX	FE2805
EGLIN AFB	RED BAY, FL	RDA	EVX	FE2823
FT CAMPBELL	TRENTON, KY	RDA	HPX	FY4812
FT DRUM	MONTAGUE, NY	RDA	TYX	FY4846
FT HOOD	GRANGER, TX	RDA	GRK	FY4824
FT POLK	FT POLK, LA	RDA	POE	FY4825
FT RUCKER	ECHO, AL	RDA	EOX	FY4805
HOLLOMAN AFB	RUIDOSO, NM	RDA	HDX	FE4801
KADENA AB	KADENA AB, JA	RDA	ODNR5	FH5270
KUNSAN AB	KUNSAN AB, KO	RDA	KJKR4	FH5284
LAJES AB	SANTA BARBARA, AZR	RDA	PLAL3	FE4486
LAUGHLIN AFB	BRACKETVILLE, TX	RDA	DFX	FE3099
MAXWELL AFB	CARRVILLE, AL	RDA	MXX	FE3300
MINOT AFB	DEERING, ND	RDA	MBX	FE4528
MOODY AFB	SOUTH STOCKTON, GA	RDA	VAX	FE4830
ROBINS AFB	JEFFERSONVILLE, GA	RDA	JGX	FE2067
VANCE AFB	CHEROKEE, OK	RDA	VNX	FE3029

ATTACHMENT 2 (Continued)

EFFECTIVITY

NEXRAD Site Name	City, ST	EQP	SID	ORG Code
VANDENBERG AFB	ORCUTT, CA	RDA	VBX	FE4610

FAA

ANCHORAGE FAA	KENAI, AK	RDA	AHG	6901AJ
BETHEL FAA	BETHEL, AK	RDA	ABC	690112
FAIRBANKS FAA	FAIRBANKS, AK	RDA	APD	690178
KAMUELA/KOHALA APT	KAMUELA, HI	RDA	HKM	699235
KING SALMON FAA	KING SALMON, AK	RDA	AKC	690137
MIDDLETON ISLAND	MIDDLETON ISLAND, AK	RDA	AIH	690140
MOLOKAI FAA	MOLOKAI, HI	RDA	HMO	699213
NOME FAA	NOME, AK	RDA	AEC	690147
SAN JUAN FAA	SAN JUAN, PR	RDA	JUA	69F362
SITKA FAA	BIORKA ISLAND, AK	RDA	ACG	690141
SOUTH KAUAI FAA	SOUTH KAUAI, HI	RDA	HKI	699211
SOUTH SHORE FAA	NAALEHU, HI	RDA	HWA	699201

NWS: Maintenance Note 40
DoD: TO 31P1-4-108-622
FAA: EEM Modification Handbook 6345.1 CHG 52, Chap 50

ATTACHMENT 3

RADOME ENTRY LOCKOUT/TAGOUT COMPLETION FORM

********** DoD Only will complete and return this form **********
NWS report completion through EMRS
FAA report completion through LEM

Site Name: _____

Site Identifier: _____

Total Time to Complete this Modification Document: _____

Technician's Name(s): _____

Technician's Phone Number: _____

Date Completed: _____

Problem(s) Encountered:

_____

_____

_____

_____

Upon completion of this form, return the information to the ROC using one of the four methods below:

1. Mailing Address: Program Branch, Retrofit Management Team
   WSR-88D Radar Operations Center
   3200 Marshall Ave., Suite 101
   Norman, OK 73072-8028

2. FAX Number: (405) 573-3480
   ATTN: Retrofit Management Team

3. E-mail Address: NEXRAD.Logistics@noaa.gov

4. Web Version: http://www.roc.noaa.gov/ssb/logistics/complete/

ATTACHMENT 4 - SAMPLE EMRS REPORT